



Evaluation and Quality Control for the Copernicus Seasonal Forecast Systems

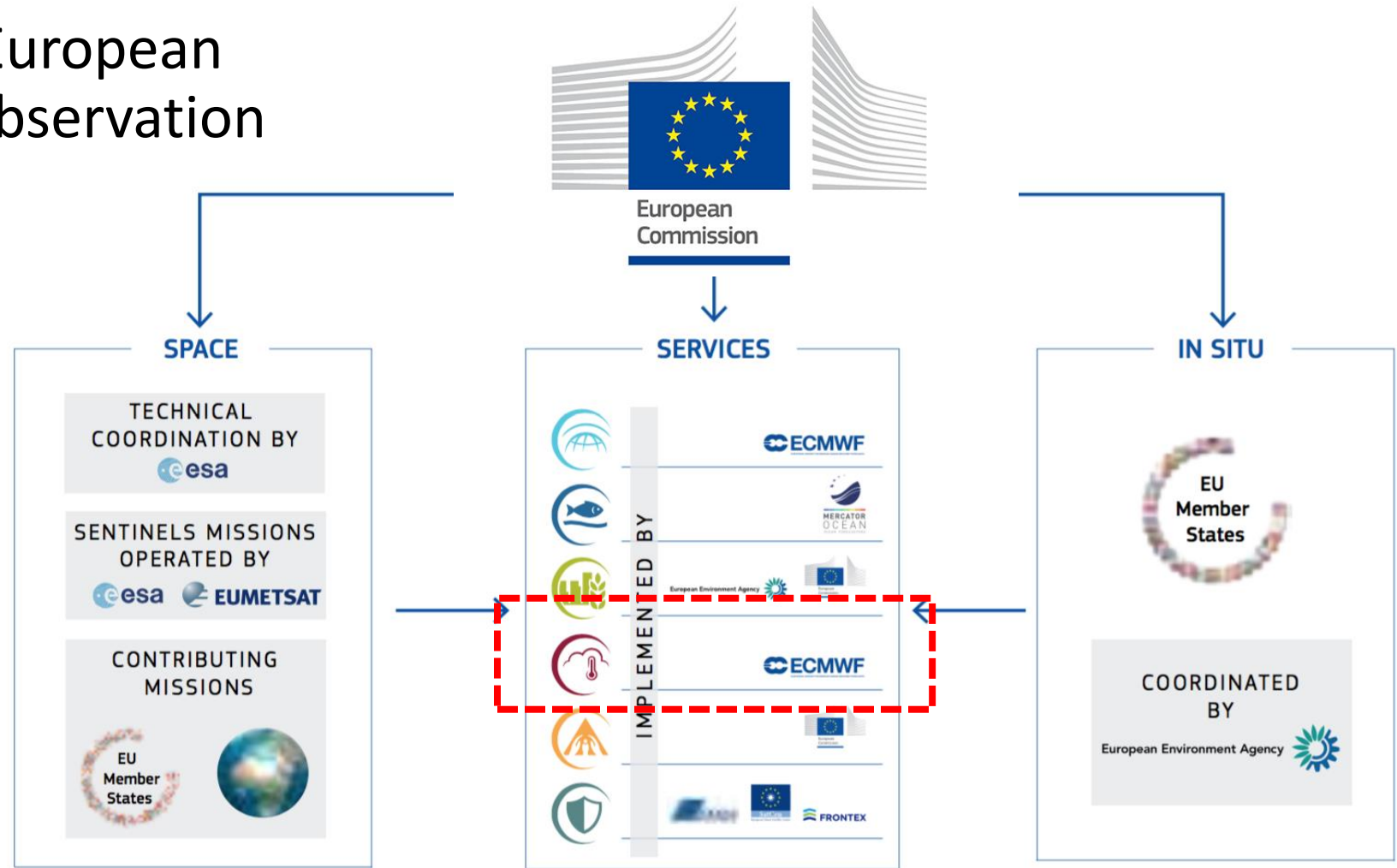
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Computer Scientist

13 / 12 / 2017

AGU Fall Meeting, New Orleans

The Copernicus Programme

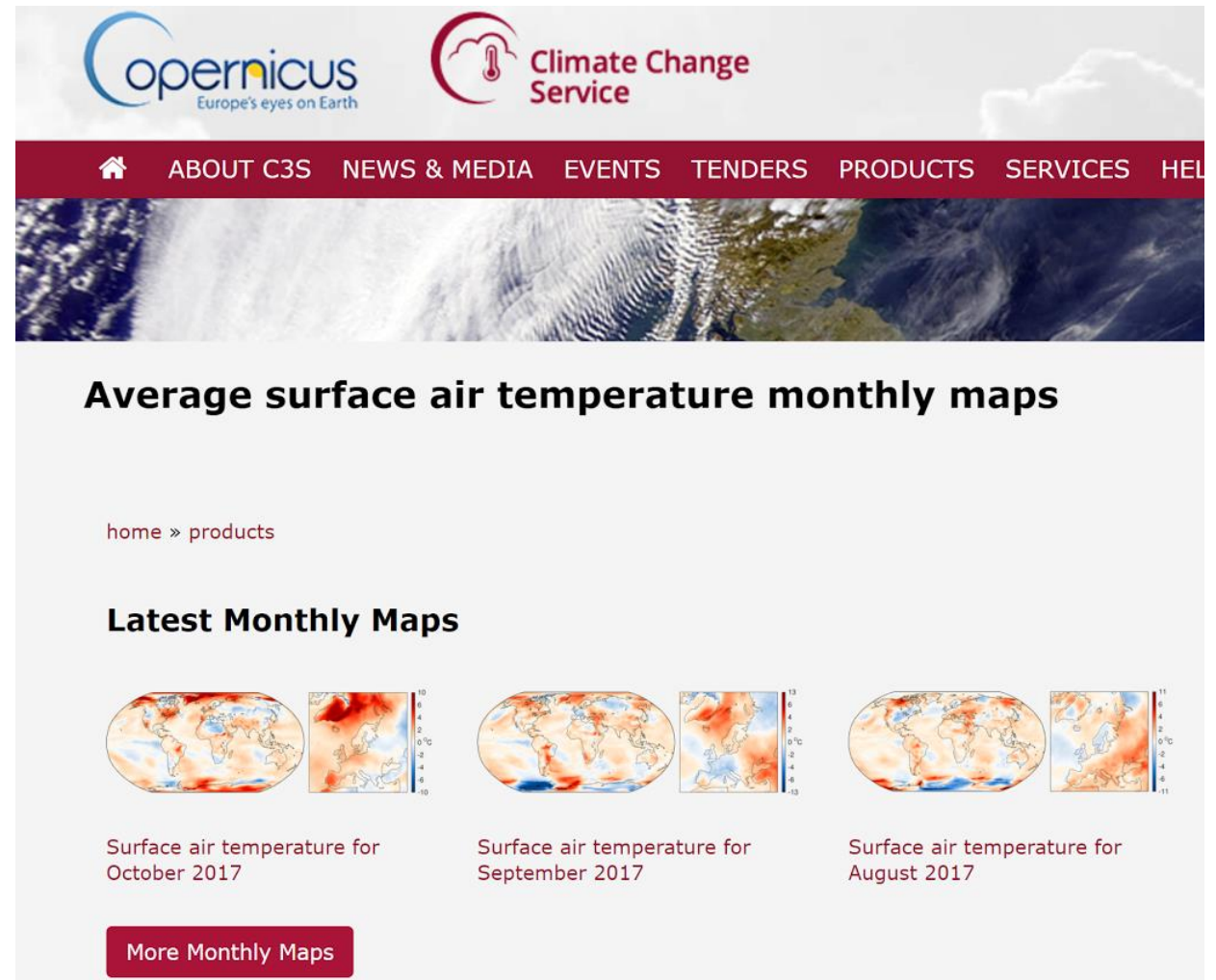
- Establishment of a European capacity for Earth Observation



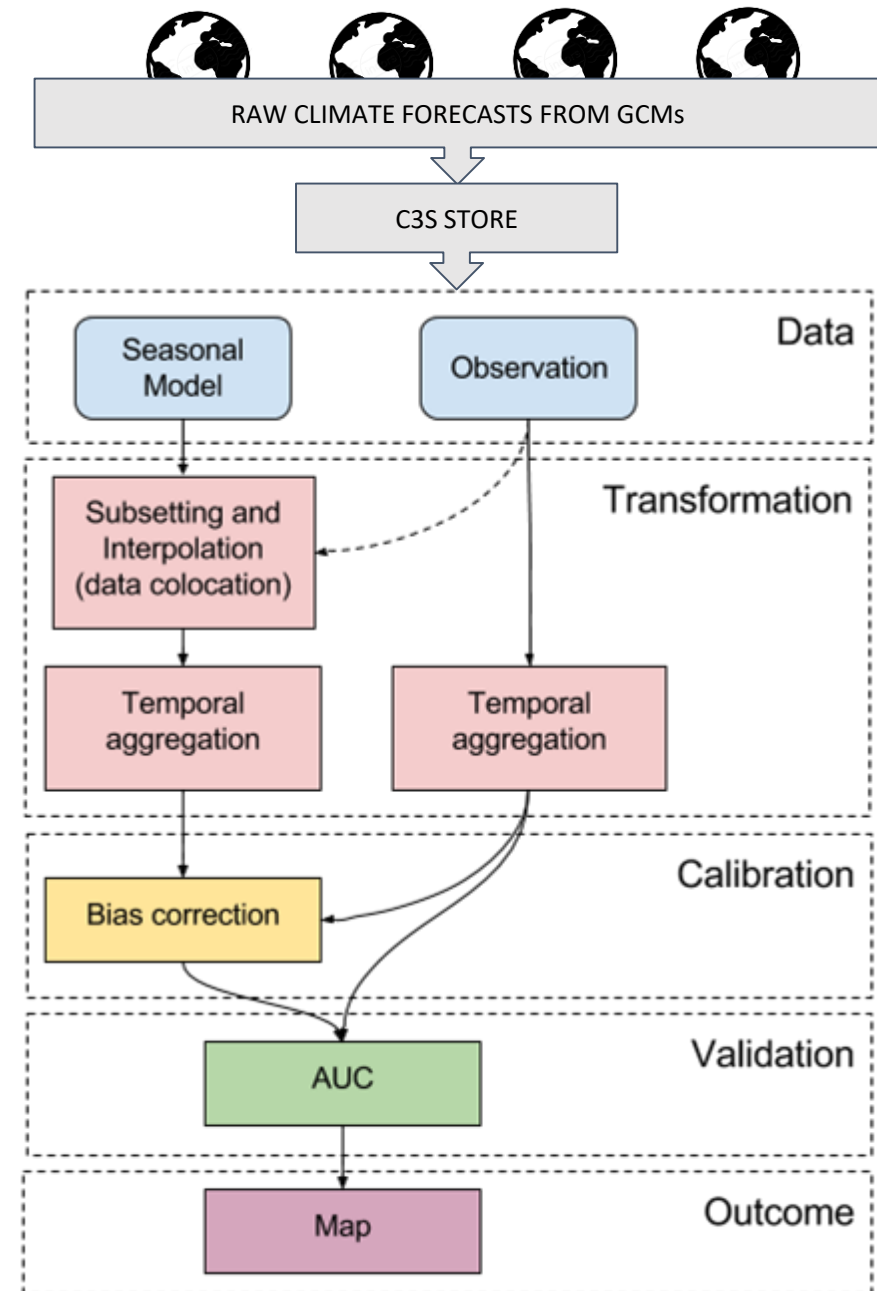
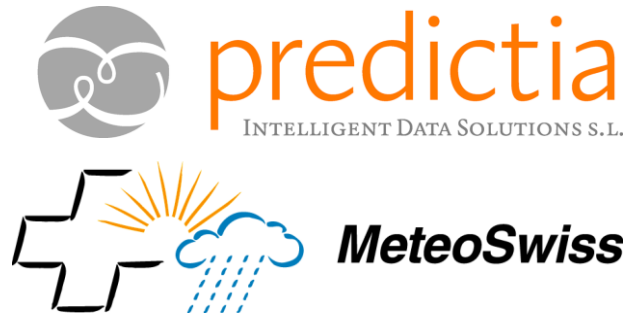
The Copernicus Climate Change Service (C3S)

- The C3S will openly provide authoritative information about past, present and future climate
- Targetting the private and public sectors, e.g. for decision making in the energy sector

<https://climate.copernicus.eu>

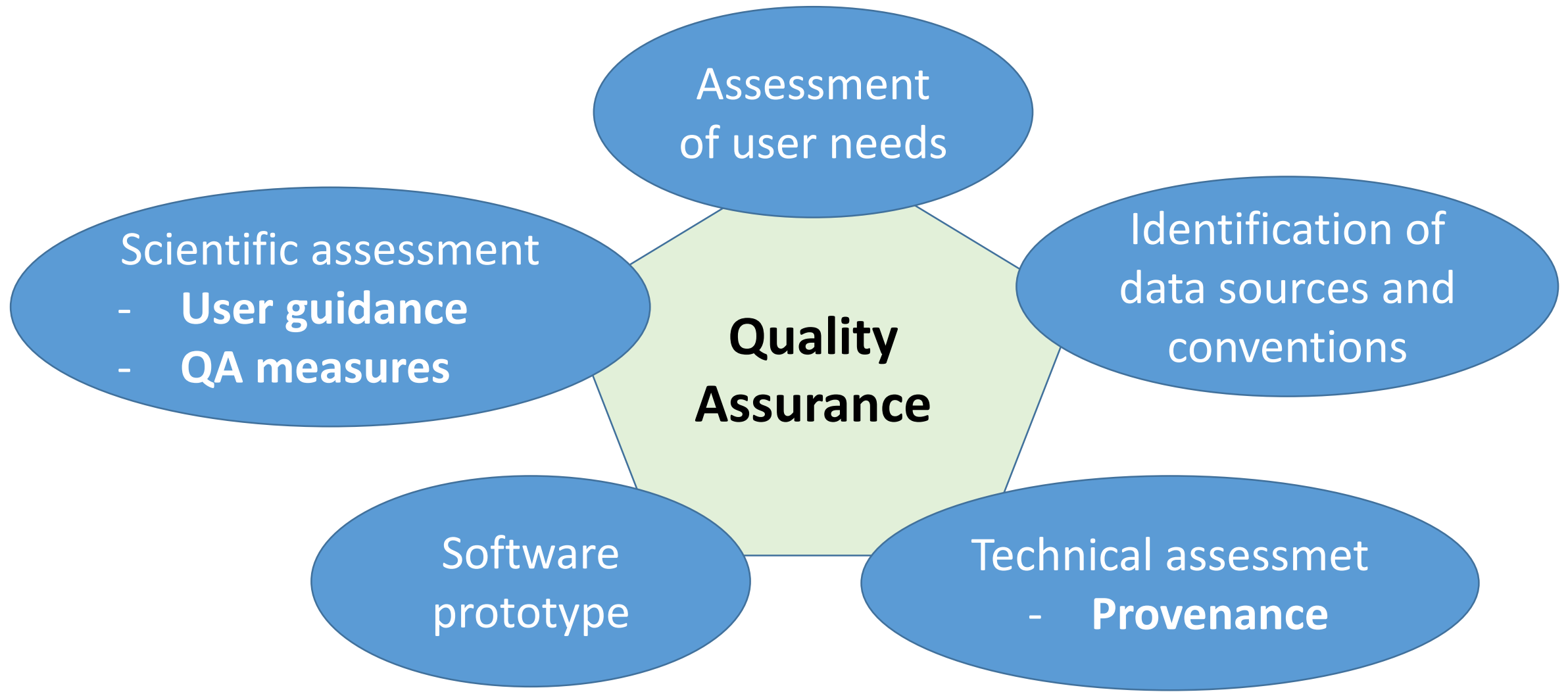


Quality assurance strategy for seasonal forecasts



EXAMPLE C3S PRODUCT GENERATION WORKFLOW

Quality assurance strategy for seasonal forecasts



C3S data conventions

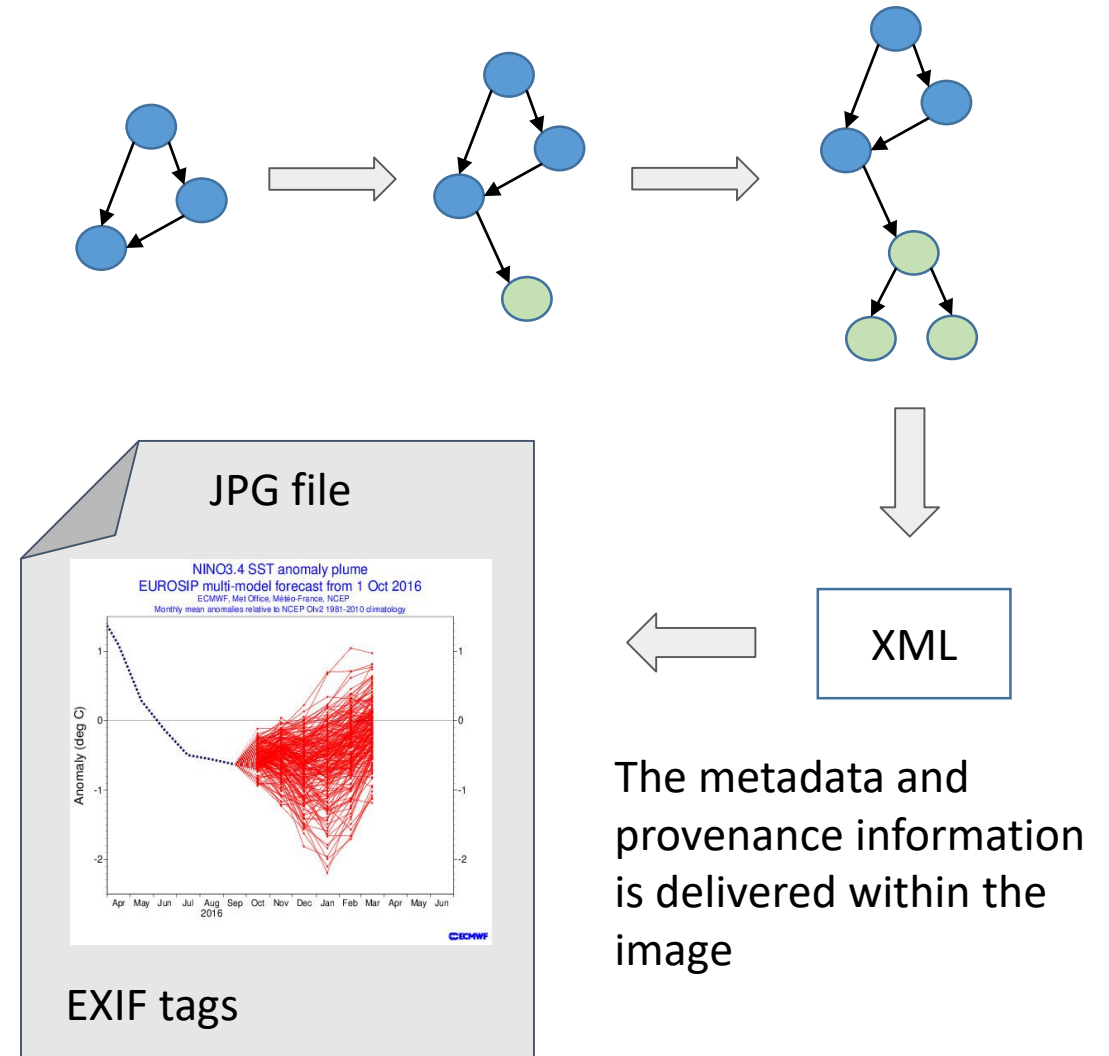
- File content, format, structure and metadata
- Based on CF conventions, SPECS, CMIP, and ACDD
 - NetCDF
 - File naming and distribution
 - Attributes (e.g. **source**, **commit**)
 - Spatial and time coordinates and axes: names, valid_min/max, units, bounds
 - Variables: names, units, dimension names, cell methods

Metadata and provenance model

- **Metaclick**. It allows encoding metadata and provenance as a graph

<http://metaclick.predictia.es>

- The graph can be serialized and attached to products
- Metaclick info. of a product can be visually inspected



Metadata and provenance model

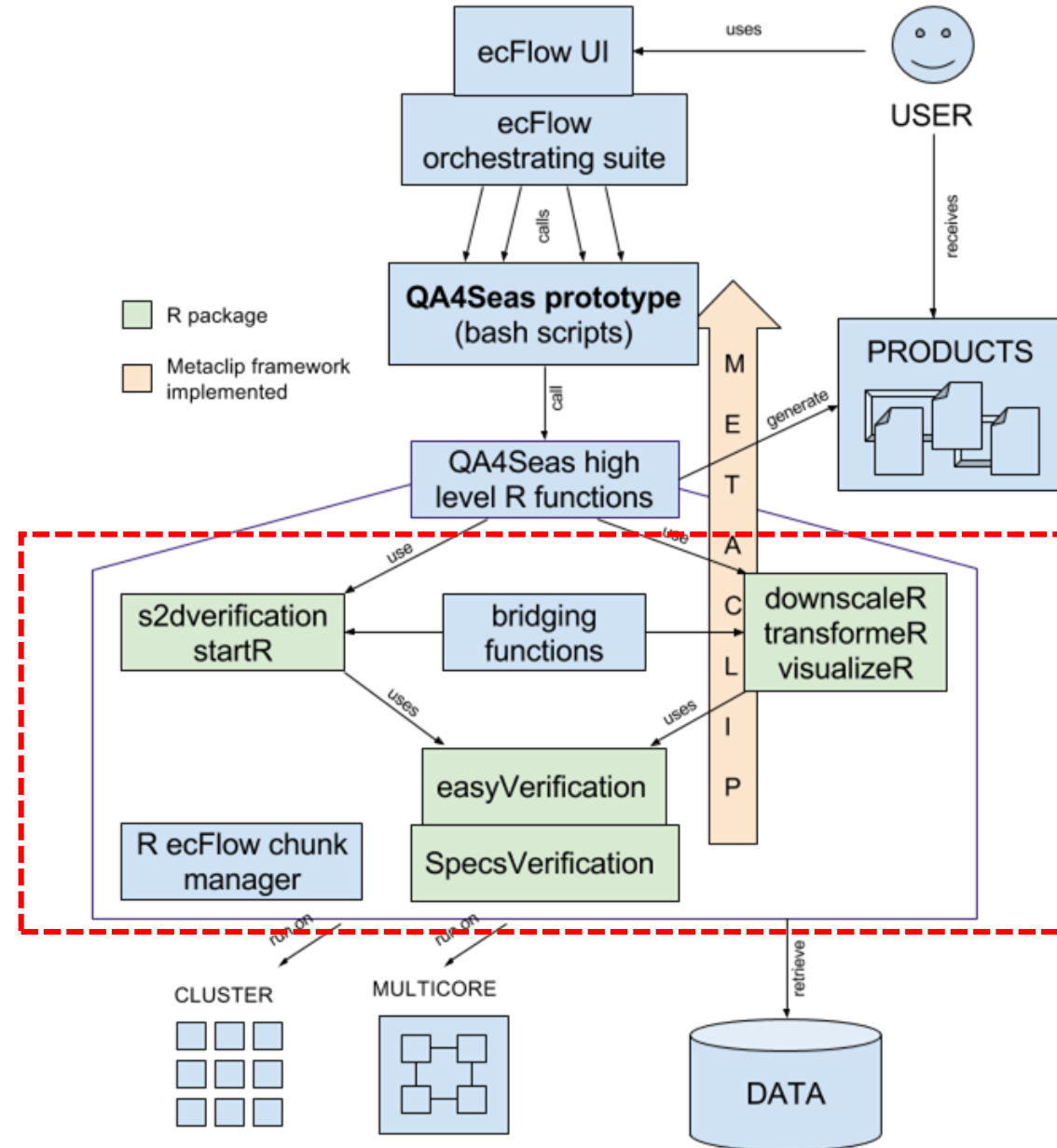
Missing DEMO video of use of
<http://demo.predictia.es/qa4seas/metadata/> ,
you can ask nicolau.manubens@bsc.es

Metadata and provenance model

- Based on the W3C Resource Description Framework
- Modular and extensible
- Abstract
- Provides meaningful provenance traces

Prototype

- Proof-of-concept software
- Existing open-source R packages are being evolved
- Performance will also be addressed



Conclusions

- A quality control and provenance strategy for climate seasonal forecasts has been shown from a producer perspective
- The solution consists in defining **quality measures** for the products and in establishing a **provenance mechanism**
- **User guidance and data conventions** are fundamental
- An extensible **provenance framework called Metaclip** has been shown
- Open-source software for the QC of seasonal forecasts is being developed



Thank you

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